SANDENVENDO AMERICA INC

HOT FOOD DISPLAY

Technical Service Manual

MODELS **HFD000006 & 7**
HFDC00002
HFDM00002
HFDH00001
HFDHC0001,2,3,4

HFD000006, HFD000007

HFDC00002

HFDM00002

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A COMMITMENT TO SAFETY

The SandenVendo is committed to safety in every aspect of our product design. SandenVendo is committed to alerting every user to the possible dangers involved in improper handling or maintenance of our equipment. The servicing of any electrical or mechanical device involves potential hazards, both to those servicing the equipment and to users of the equipment. These hazards can arise because of improper maintenance techniques. The purpose of this manual is to alert everyone servicing SandenVendo equipment of potentially hazardous areas, and to provide basic safety guidelines for proper maintenance.

This manual contains various warnings that should be carefully read to minimize the risk of personal injury to service personnel. This manual also contains service information to insure that proper methods are followed to avoid damaging the Hot Food Display (HFD) or making it unsafe. It is also important to understand these warnings are not exhaustive. SandenVendo could not possibly know, evaluate, or advise of all of the conceivable ways in which service might be done, nor can SandenVendo predict all of the possible hazardous results. The safety precautions outlined in this manual provide the basis for an effective safety program. Use these precautions, along with the service manual, when installing or servicing the HFD.

We strongly recommend a similar commitment to safety by every servicing organization. Only properly trained personnel should have access to the interior of the machine. This will minimize the potential hazards that are inherent in electrical and mechanical devices. SandenVendo has no control over the machine once it leaves the premises. It is the owner or lessor's responsibility to maintain the Hot Food Display in a safe condition. Follow all Safety Rules and Safety Warnings in this manual. If you have any questions, please contact the Technical Services Department of SandenVendo.

SAFETY RULES

- Read the Safety Warnings before installation or service.
- Test for proper grounding before installing to reduce the risk of electrical shock and fire.
- Turn off power switch and disconnect power cord from wall outlet before servicing.
- Use only fully-trained service technicians for Power-On servicing.
- Use adequate equipment when moving the HFD.
- Use only authorized replacement parts.
- Be aware of inherent dangers in rocking or tipping the HFD.
- Always turn power off before plugging or unplugging HFD to wall outlet.

FOOD FOR THE HOT FOOD DISPLAY

The HFD, HFDM, and HFDH units are design to hold unwrapped, wrapped, and boxed food. The HFDHC is designed to hold wrapped and boxed food. Hot food displays are not designed to heat cold food - put only hot food in the hot food display.

SAFETY WARNINGS

The HFD is for indoor use only. Do not use near water or in condensing humidity.

To prevent electric shock or fire, do not kink, pull, or pinch the power cord, and insure no equipment is resting on the power cord. If the power cord is damaged, unplug and replace.

Do not connect with other plugs. Do not use an extension cord.

When unplugging, first turn off the power switch. Then pull the plug at the end of the power cord, not by pulling the power cord, since the cord can be damaged, overheat, and cause a fire.

Do not spray water on the HFD. It may cause an electric shock or fire.

Do not touch the power plug, switches, or other electrical parts with wet hands. It can cause an electric shock.

Periodically check that the plug is pushed in all the way.

To prevent injuries due to falling objects, liquid spills, electric shock or fire, do not place heavy objects or liquid-filled objects on top of the HFD.

To prevent electric shock or fire, do not use volatile or flammable products in or near the HFD.

When moving the HFD: turn the HFD off, unplug, and allow the unit to cool. To prevent glass breakage and injury, do not push on the glass. Also, use proper equipment and lifting techniques. Insure the product doesn't tip while it is being moved.

If a lamp or any glass cracks or breaks, turn off the power and discard all food in the HFD. Replace lamp and / or glass. Remove all glass fragments. Carefully inspect all surfaces, corners, and gaskets to insure all glass fragments have been removed before returning HFD to service.

Keep HFD out of direct sunlight and away from heat sources.

Do not hang from the door – this may cause injury or electric shock.

Turn off and unplug HFD before servicing, and let HFD cool before cleaning or servicing.

Use proper tools while servicing.

Use only authorized replacement parts.

The HFD temperatures are factory set to meet NSF food safety requirements. Changing temperature settings may adversely impact food safety.

The lamps are an integral part of the food heating system. If a lamp is not illuminated, the temperatures may not be maintained for food safety.

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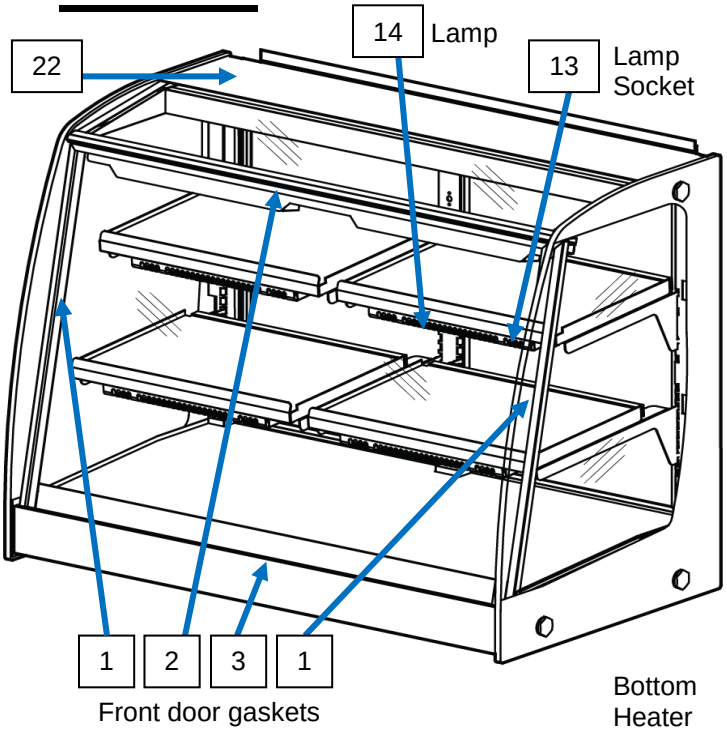
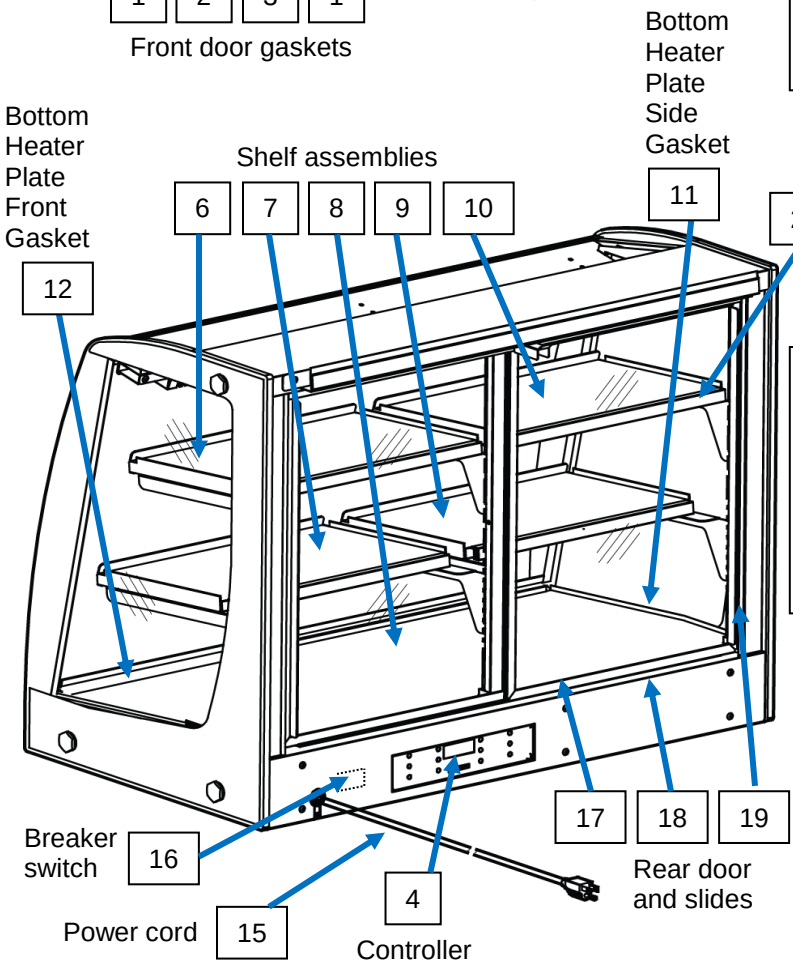
PARTS

HFD000006, HFD000007



Item	Part #	Description
1	1158489	Gasket, Door, Side
2	1158477	Gasket, Door, Upper
3	1158491	Gasket, Door, Lower
4	1201293	Controller
5	1207143	Heater Kit (not shown)
6	1207441	Shelf Assembly, Upper Left
7	1207465	Shelf Assembly, Middle Left
8	1207415	Shelf Assembly, Bottom
9	1207476	Shelf Assembly, Middle Right
10	1207453	Shelf Assembly, Upper Right
11	1158685	Gasket A
12	1158696	Gasket B
13	1159513	Lamp Socket
14	1159525	Xenon Heating Lamp
15	1216614	Power Cord Plug
16	1161921	Circuit Breaker, 15 Amp
17	1194238	Rear Door, HFD
18	1158673	Slide Rail, Lower (Horizontal)
19	1158969	Slide Rail, Side (Vertical)
20	1159604	Shelf Edge Gasket
21	1180812	Fan, HFD (HFD 7 only)



Shelf Assembly Connector Colors

Item	Connector Color	Description
6	White	Shelf Asy, Upper Left
7	Black	Shelf Asy, Middle Left
8	Red (left) Green (right)	Shelf Asy, Bottom Shelf
9	Yellow	Shelf Asy, Middle Right
10	Blue	Shelf Asy, Upper Right

See last page for Controller Connections for electrical component part numbers

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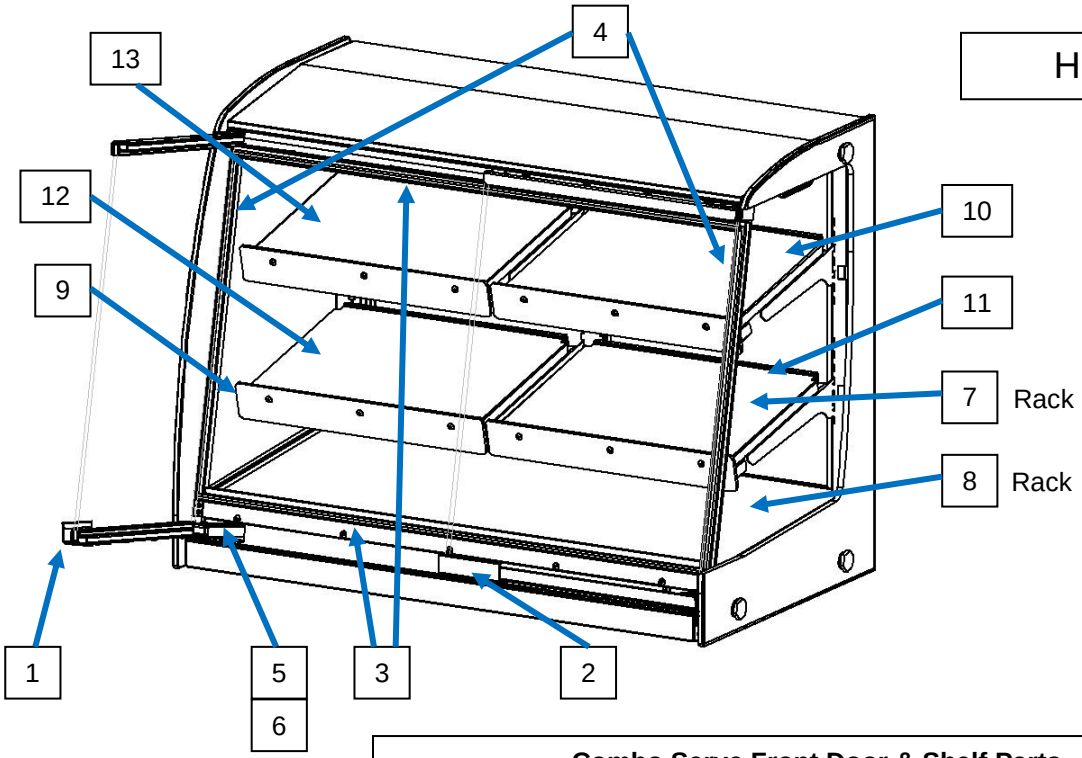
HFDC00002



Combo Serve Front Door & Shelf Parts

Item	Part #	Description
1	1200392	Left Door Assembly
2	1200392-1	Right Door Assembly
3	1185603-1	Frame Gasket (Horizontal, 2x)
4	1185603-2	Frame Gasket (Vertical, 2x)
5	1187405	Damper (one each side)
6	1202273	Extension Spring (one each side)
7	1199716	Rack, Top/Middle Shelf (not shown, 4x)
8	1199728	Rack, Bottom Shelf (not shown, 2x)
9	1201311	Shelf Guard (4x)
10	1207751	Shelf Assembly, Upper Left
11	1207775	Shelf Assembly, Middle Left
12	1207786	Shelf Assembly, Middle Right
13	1207763	Shelf Assembly, Upper Right
14	1219634	Rear Door Keep-Closed bracket (not shown)

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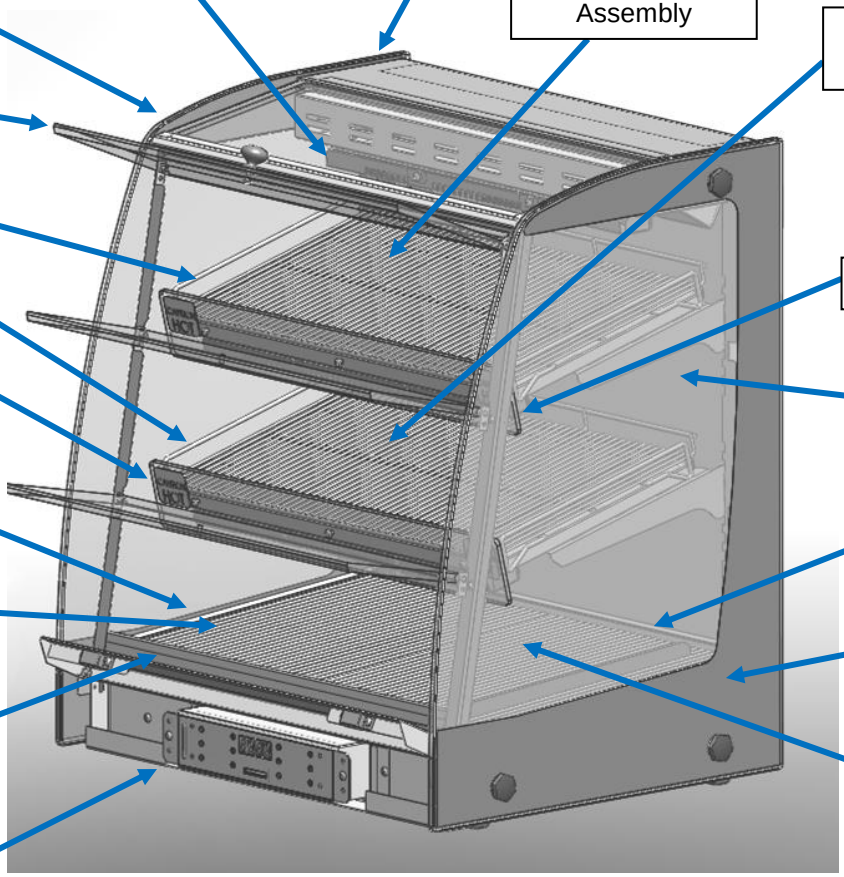
HFDM00002



1178854 Lamp Guard

1166955 Side Glass (no decal)

1165355 Left Decal

1207555 Shelf Assembly

1207567 Shelf Assembly

1177198 Front Door

1182055 Middle & Upper Shelf Rack, Black

1178798 Shelf Guard

1203125 Caution Hot Label

1178038 Vertical Rear Gasket (not shown)

1158685 Side Gasket

1178052 Horizontal Rear Gasket

1182066 Bottom Rack, Black

1165366 Right Decal

1177435 Front Gasket (not shown)

1207488 Bottom Shelf Assembly

1201293 Controller

On back of unit (not shown):
1161921 Breaker, 15A
1162225 Power Cord

See last page for Controller Connections for electrical component part numbers

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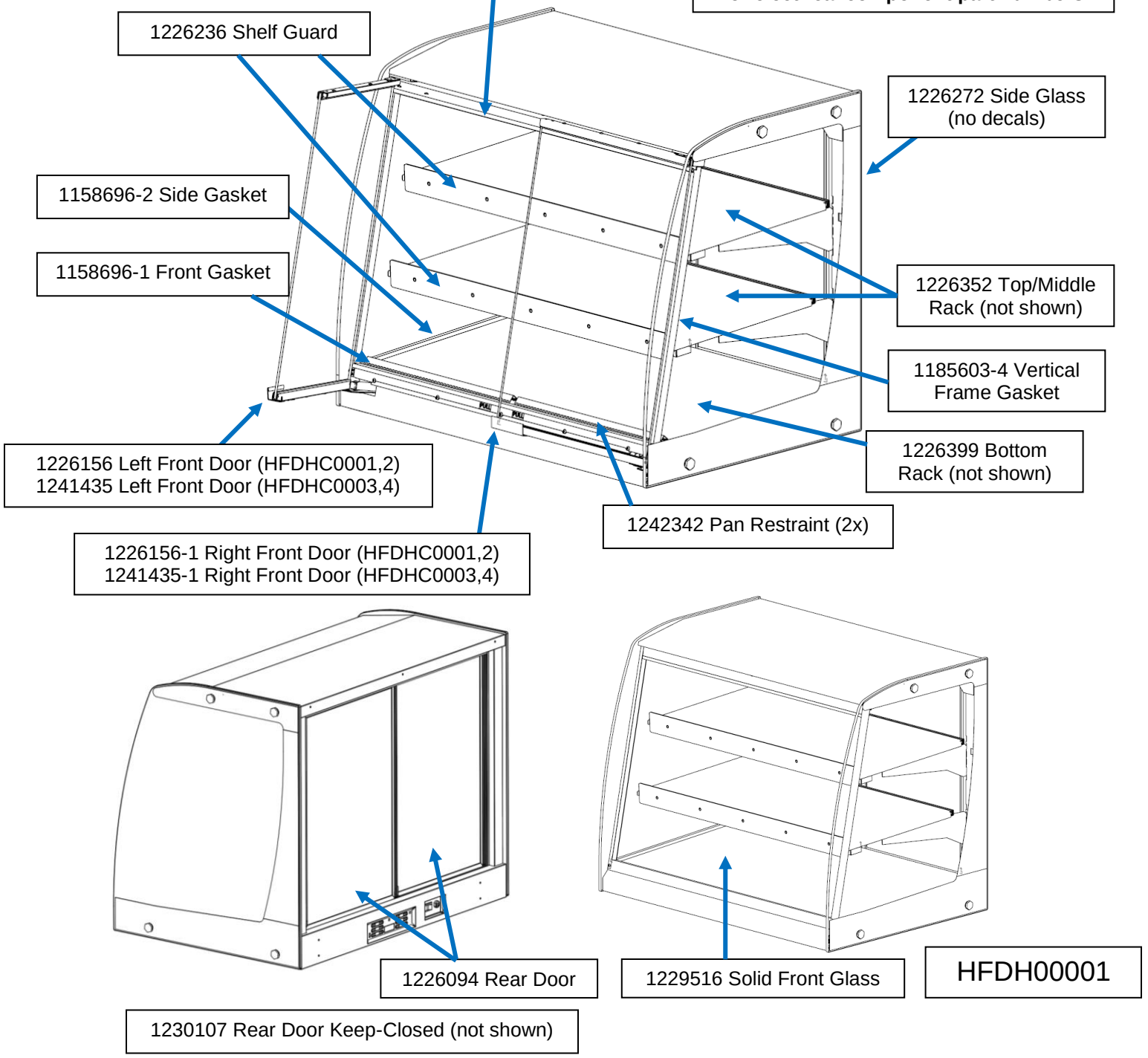
HFDHC0001,2,3,4

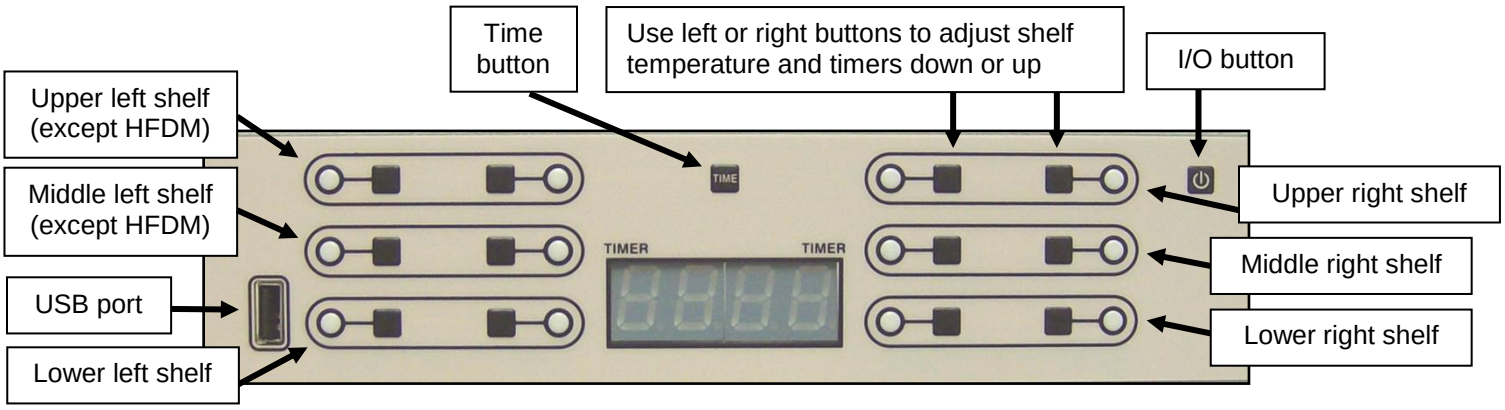
See last page for Controller Connections for electrical component part numbers


1185603-3 Horizontal Frame Gasket
1226236 Shelf Guard
1226272 Side Glass (no decals)
1158696-2 Side Gasket
1158696-1 Front Gasket
1226352 Top/Middle Rack (not shown)
1185603-4 Vertical Frame Gasket
1226399 Bottom Rack (not shown)
1226156 Left Front Door (HFDHC0001,2)
1241435 Left Front Door (HFDHC0003,4)
1242342 Pan Restraint (2x)
1226156-1 Right Front Door (HFDHC0001,2)
1241435-1 Right Front Door (HFDHC0003,4)
1226094 Rear Door
1229516 Solid Front Glass
1230107 Rear Door Keep-Closed (not shown)

HFDH00001

OPERATION

Display and Keypad



Timer Setting and Operation

Note: to help prevent keypad damage, push keypad buttons only with finger or thumb; do not use fingernail, utensil, tool, pen, or other object.

Circulation fans may be turned on or off by the switch at the top rear of the HFD (HFD 7 and HFDC).

Normal Operation

Pressing the I/O button turns the HFD on or off. When controller is off, all lamps, heaters, displays and indicators are off. Front on/off button (HFDC only): press and hold for 5 seconds to turn the HFDC on or off.

Timers

When a timer is off, pressing the timer button once sets the countdown timer to the value preprogrammed into the controller.

Pressing the timer button again within three seconds (while the indicator next to the button is blinking) sets the timer to 30 minutes.

Each successive press (within three seconds) adds 30 minutes to the time, up to 4 hours.

At 4 hours, the next button press cycles the timer back to 30 minutes again.

Once the timer is activated, the LED next to the shelf timer button becomes green.

The display then reverts to HFD internal ambient temperature display.

While a timer is on, pressing a timer button once displays the remaining time for 4 seconds, then shelf temperature for 4 seconds, and then the display reverts to the internal ambient temperature display.

At 15 minutes remaining time, the LED turns yellow.

When no time remains, the LED turns red, plus an audible alarm sounds.

Pressing the timer button next to the blinking red LED clears the alarm and restarts the timer.

Holding down the Time button, then pressing a timer key, turns off the timer.

Converting Temperature from °F to °C (or °C to °F)

With controller power off, hold down the Time button, then press and hold the I/O button until the display comes on. The display will show the firmware revision.

Press and release the TIME button to change from °F to °C (or °C to °F).

Push the I/O button to turn on the HFD and lock in this setting.

Ambient Temperature Display

To turn the ambient temperature display on or off: with the controller on, press and hold the Time button and press the I/O button. (This feature is disabled in firmware revision 4.01).

Front Door

If the front door is opened (HFD6 and 7 only), the controller turns off only the lights. The display reads "OPEn". After closing the front door, the lights turn on, and the display reverts to internal ambient temperature.

Heater Temperature Adjustment

Push the I/O button to turn the unit off. The lights inside the HFD will turn off.
With controller power off, hold down the Time button, then press and hold the I/O button until the display comes on. The display will show the firmware revision.
Push either of the two buttons corresponding to the shelf that you wish to change the temperature. Both lights on either side of the buttons will begin blinking.
Push and hold the button on the left to decrease the temperature (shown on the display).
Push and hold the button on the right to increase the temperature (shown on the display).
Repeat the procedure using the buttons that correspond to each of the six shelves (for HFD6 & 7), or four shelves (HFDM).
Once the temperatures are adjusted for each of the separate zones, push the I/O button to lock in the new temperature settings and to turn the HFD back on (the lights in the HFD will come on).

Error Codes

E30 Internal ambient thermistor open circuit
E60 Upper left shelf thermistor open circuit (except HFDM)
E61 Middle left shelf thermistor open circuit (except HFDM)
E62 Lower left shelf thermistor open circuit
E63 Upper right shelf thermistor open circuit
E64 Middle right shelf thermistor open circuit
E65 Lower right shelf thermistor open circuit
E90 Unable to read USB drive (check vendo.cfg for file format error)

E70 Upper left shelf not heating (except HFDM)
E71 Middle left shelf not heating (except HFDM)
E72 Lower left shelf not heating
E73 Upper right shelf not heating
E74 Middle right shelf not heating
E75 Lower right shelf not heating

Clear the error by powering off the unit, correcting the problem, and turning the unit on again.

Programming using USB drive

The file name must be vendo.cfg and be saved on the root directory of the USB drive. The file may be edited using Notepad.

Temperature and Timer Programming Format and Download

SV01	Must be SV01
001h	This is configuration 001, h for standard HFD (n for HFDM, c for HFDC, etc.)
UL:235,2:00,0:30	**U**pper **L**eft shelf, set to 235ºF, left timer 2 hours, right timer 30 minutes
ML:235,2:00,2:00	Shelf temperatures may be set between 100 and 255ºF
LL:220,1:00,2:00	Setting a shelf temperature to 000 turns off that shelf
UR:235,2:00,1:00	Shelf temperature must be 3 digits, always in ºF
MR:235,2:00,2:00	Each timer may be set between 0:30 and 4:00
LR:220,1:00,2:00	
CF:1	1 displays ºF, 0 displays ºC
DA:1	1 turns on controller ambient display, 0 turns display off
DS:1	Front door switch – 1 for HFD6 & 7; all others 0.

Any text may follow here

There can be no spaces or blank lines. A line is terminated by pressing Enter. The only variables that are allowed to change are the date code, shelf temperatures and times, the 0 or 1 after CF:, DA:, and DS:, and the comment at the end of the file.

With the HFD off:

1. Insert the flash drive in the controller's USB port.
2. Turn on the controller. The configuration will load in less than 5 seconds.
3. The display will show the configuration code (example: 001h) from the vendo.cfg file.
4. Pull the flash drive out of the controller (controller may remain on).

Factory Controller Configurations

SV01
001h
UL:235,2:00,1:00
ML:235,2:00,2:00
LL:220,1:00,2:00
UR:235,1:00,1:00
MR:235,2:00,2:00
LR:220,2:00,1:00
CF:1
DA:1
DS:1

HFD 6 & 7					
Left Side			Right Side		
Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
235	2:00	1:00	235	1:00	1:00
235	2:00	2:00	235	2:00	2:00
220	1:00	2:00	220	2:00	1:00

SV01
001n
UL:000,2:00,2:00
ML:000,2:00,2:00
LL:245,2:00,2:00
UR:245,2:00,2:00
MR:245,2:00,2:00
LR:245,2:00,2:00
CF:1
DA:1
DS:0

HFDM 2					
Left Side			Right Side		
Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
OFF	2:00	2:00	245	2:00	2:00
OFF	2:00	2:00	245	2:00	2:00
245	2:00	2:00	245	2:00	2:00

SV01
001c
UL:240,2:00,2:00
ML:240,2:00,2:00
LL:240,2:00,2:00
UR:240,2:00,2:00
MR:240,2:00,2:00
LR:240,2:00,2:00
CF:1
DA:1
DS:0

HFDC 2					
Left Side			Right Side		
Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
240	2:00	2:00	240	2:00	2:00
240	2:00	2:00	240	2:00	2:00
240	2:00	2:00	240	2:00	2:00

HFDH and HFDHC

SV01 ←
00HC
UL:245,2:00,2:00
ML:245,2:00,2:00
LL:245,2:00,2:00
UR:245,2:00,2:00
MR:245,2:00,2:00
LR:245,2:00,2:00
CF:1
DA:1
DS:0

HFDH and HFDHC					
Left Side			Right Side		
Heater Setpoint °F	Left Timer	Right Timer	Heater Setpoint °F	Left Timer	Right Timer
245	2:00	2:00	245	2:00	2:00
245	2:00	2:00	245	2:00	2:00
245	2:00	2:00	245	2:00	2:00

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TROUBLESHOOTING Unplug unit before servicing

Symptom	Possible Cause	Remedy
Unit does not turn on	Power cord unplugged No power at outlet	Plug HFD cord in outlet. Check voltage at outlet (115VAC)
	HFD circuit breaker off	Turn on breaker. HFD6 & 7: remove lower rear cover to access breaker.
	Internal power cord disconnected	Check resistance across plug, ensure the breaker is on, measure resistance across plug terminal, line and neutral, should be about 160Ω.
	Front glass door open	HFD6 & 7 only: Controller should read “OPEn” . Shut front glass door, press power button on controller to initialize.
One or more Xenon lamps is off	Bulb blown	Check at terminal for resistance of about 44Ω. Check to ensure bulb is securely installed. Replace blown bulb(s).
HFD display ambient does not reach 150°F	One or more heater plates not reaching temperature. An error (E70 to E75) may be displayed on controller.	HFD, HFDC and HFDM need 30 minutes to reach temperature. HFDH and HFDHC needs at least 1 hour. Check plate temperature at controller (see controller operation).
	One or more Xenon lamp not functioning	Check at terminal for resistance of about 44Ω. Check to ensure bulb is securely installed. Replace blown bulb(s).
E60 to E65 error	Heater thermistor open circuit	Pull out controller, disconnect corresponding heater connector. If resistance between the red wires is >100kΩ, check cause of open circuit. Heater may need replacing.
Heater plate not heating	Fuse blown on controller	Remove controller and check fuses.
	Wires disconnected	Remove controller and check all connections at controller.
	Failed heating element	Check resistance across white and black terminals from heater. Resistance should be about 95Ω at room temperature.

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CONTROLLER CONNECTIONS